

Abstract of the Disclosure

Length and diameter measurements are conducted within an anatomical vessel or body by moving a micro/miniature accelerometer disposed at the distal end of a catheter. The measurements are made by marking an initial position, moving the catheter tip throughout the region, and tracking the position of the tip in real time. As the tip of the catheter moved within the vessel, its position is recorded from the initial (fiducial) position. The linear and/or spatial region within the vessel is then calculated from the accelerometer readings. A three-axis or two-axis approach may be used. The acceleration signals are then processed through double integration to determine the volume of interest, preferably as a computer visualization. The accelerometers used are preferably Micro-Electromechanical System (MEMs) type devices, positioned orthogonally. As the catheter is advanced then pulled back, it moves and strikes the walls of the vessel. The accelerations are recorded and integrated twice, to reveal the path taken by the tip, and subsequently the dimensions of the inside of the vessel volumetrically. The first integration advances from acceleration of velocity, and the next integration, from velocity to distance. The distance is then, in turn, used to determine the shape of the vessel volumetrically in three-space.